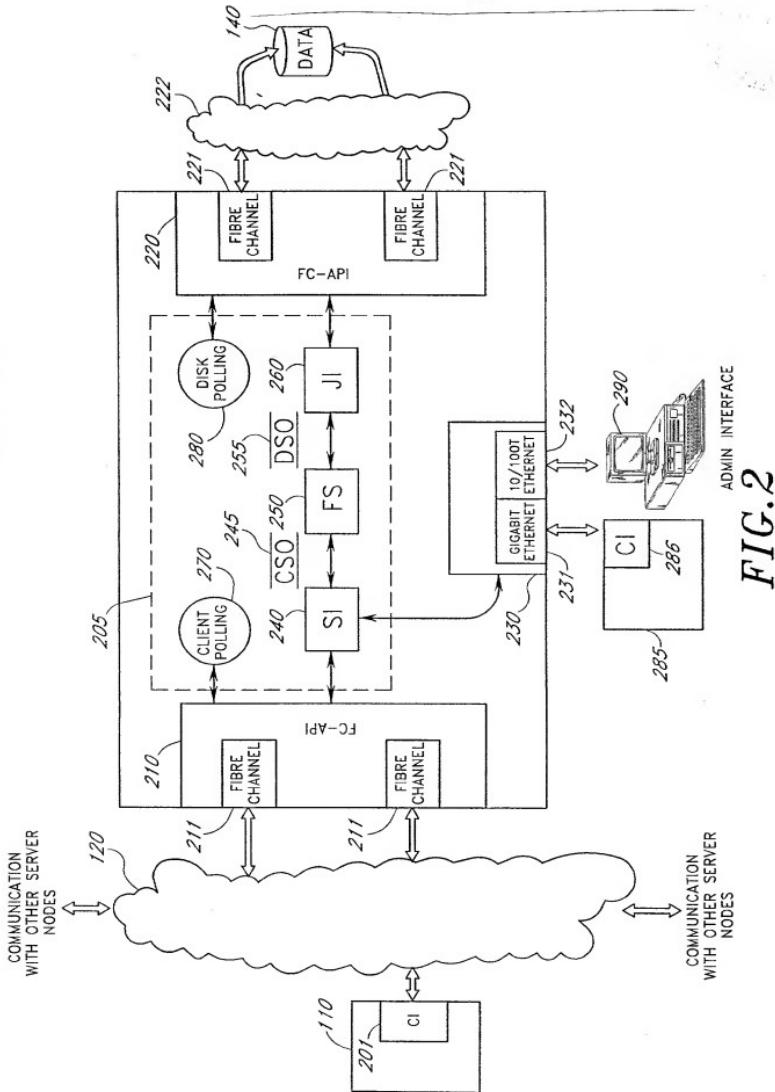
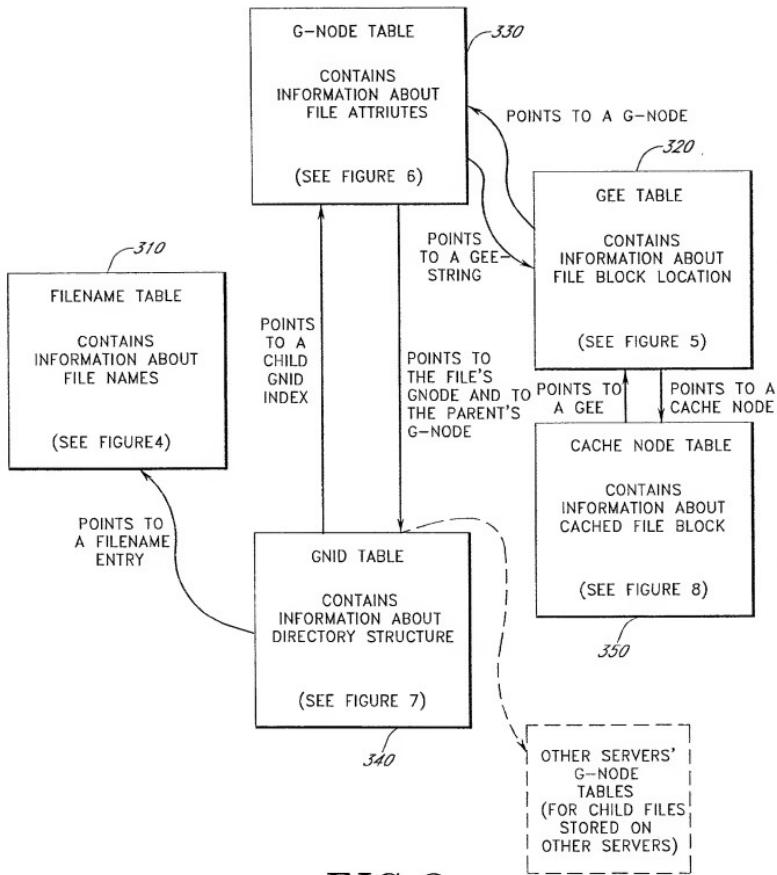


*FIG. 1*



*FIG.3*

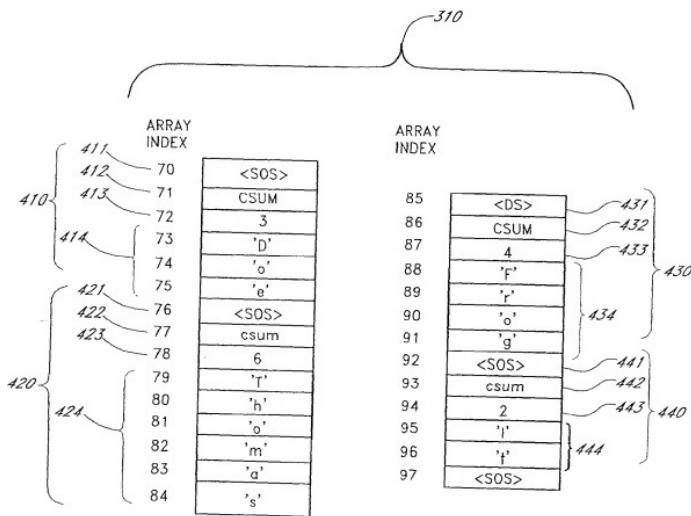


FIG. 4

INDEX	G-CODE	DATA	FILE BLOCK	LOGICAL BLOCK
510	45	GNODE	GNODE=67, EXTENT=2, ROOT=TRUE	
511	46	DATA	DISK LOGICAL BLOCKS: 456,457 DRIVE 13	1
512	47	DATA	DISK LOGICAL BLOCKS: 667,668 DRIVE 15	2
513	48	DATA	DISK LOGICAL BLOCKS: 112,113 DRIVE 19	3
514	49	PARITY	DISK LOGICAL BLOCKS: 554,555 DRIVE 2	
515	50	DATA	DISK LOGICAL BLOCKS: 458,459 DRIVE 13	4
516	51	DATA	DISK LOGICAL BLOCKS: 669,670 DRIVE 15	5
517	52	DATA	DISK LOGICAL BLOCKS: 119,120 DRIVE 19	6
518	53	PARITY	DISK LOGICAL BLOCKS: 556,557 DRIVE 2	
519	54	LINK	INDEX 76	
520	...	...	...	
521	76	GNODE	GNODE=67, EXTENT=3, ROOT=FALSE	
522	77	DATA	DISK LOGICAL BLOCKS: 460,461,462 DRIVE 13	7
523	78	DATA	DISK LOGICAL BLOCKS: 671,672,673 DRIVE 15	8
524	79	PARITY	DISK LOGICAL BLOCKS: 121,122,123 DRIVE 19	
525	80	LINK	INDEX 88	
526	...	...	...	
527	88	GNODE	GNODE=67, EXTENT=3, ROOT=FALSE	
528	89	DATA	DISK LOGICAL BLOCKS: 463,464,465 DRIVE 13	9
529	90	DATA	DISK LOGICAL BLOCKS: 674,675,676 DRIVE 15	10
530	91	PARITY	DISK LOGICAL BLOCKS: 124,125,126 DRIVE 19	
531	92	GNODE	GNODE=43, EXTENT=4, ROOT=FALSE	
532	...	...	...	

FIG. 5

ATTRIBUTE DATA	
602	FILE ATTRIBUTE-TYPE
604	FILE ATTRIBUTE-MODE
606	FILE ATTRIBUTE-LINKS
608	FILE ATTRIBUTE-UID
610	FILE ATTRIBUTE-GID
612	FILE ATTRIBUTE-SIZE
614	FILE ATTRIBUTE-USED
620	FILE ATTRIBUTE-FILEID
622	FILE ATTRIBUTE-ATIME
624	FILE ATTRIBUTE-MTIME
626	FILE ATTRIBUTE-CTIME
628	CHILD_GNID INDEX
630	GEE INDEX-LAST USED
631	GEE OFFSET-LAST USED
632	GEE INDEX-MIDPOINT
633	GEE OFFSET-MIDPOINT
634	GEE INDEX-TAIL
635	GEE OFFSET-TAIL
636	GEE INDEX-ROOT
638	GNODE STATUS
640	QUICK SHOT STATUS
642	QUICK SHOT LINK

FIG. 6

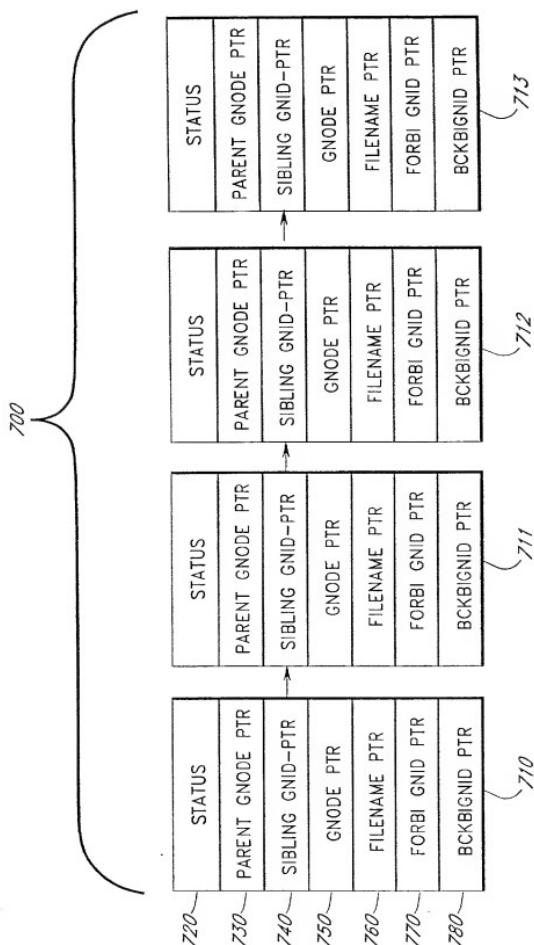


FIG. 7

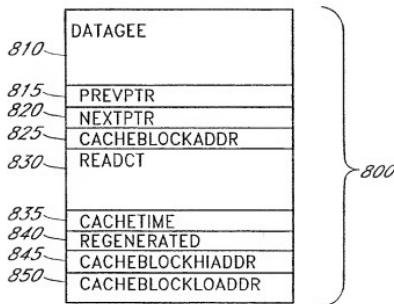
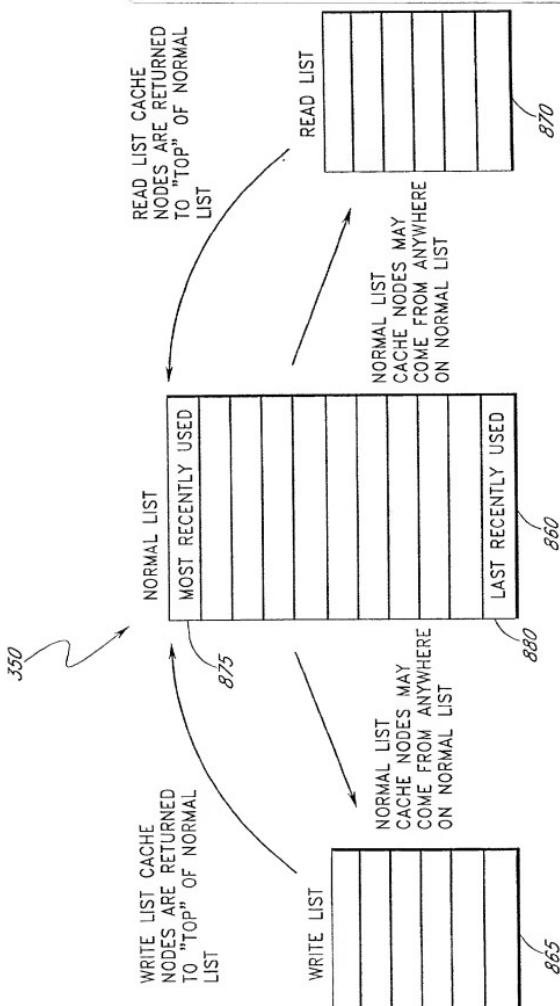
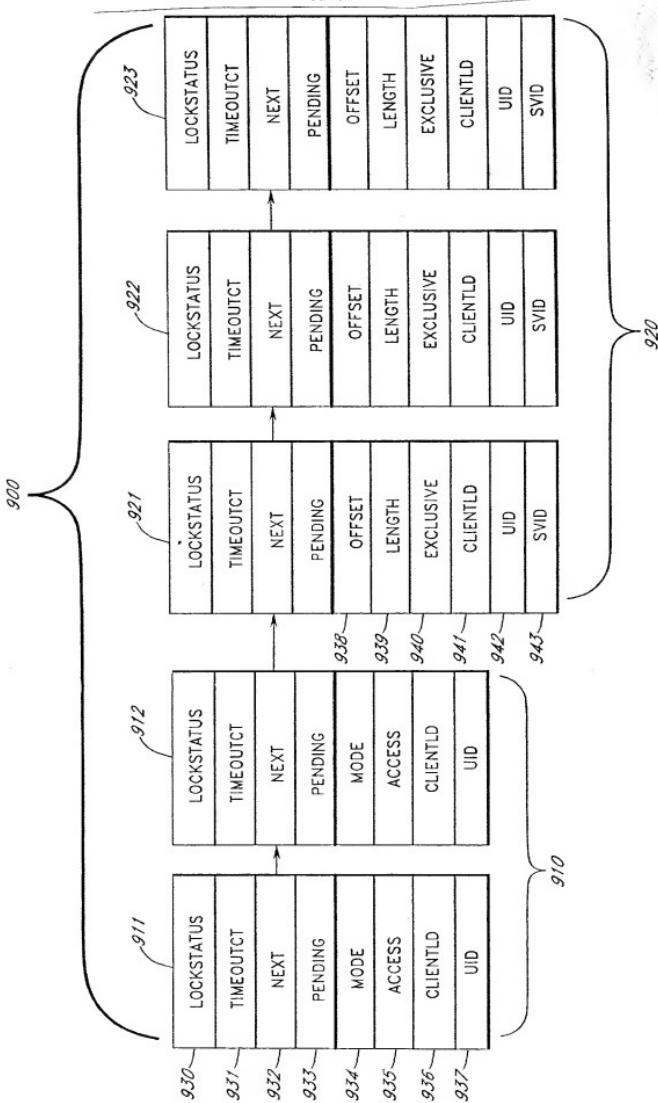
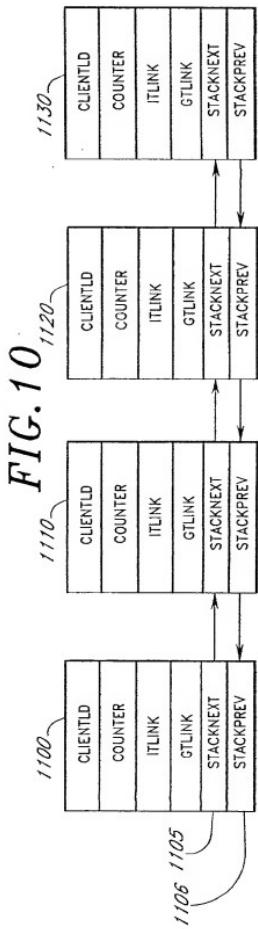
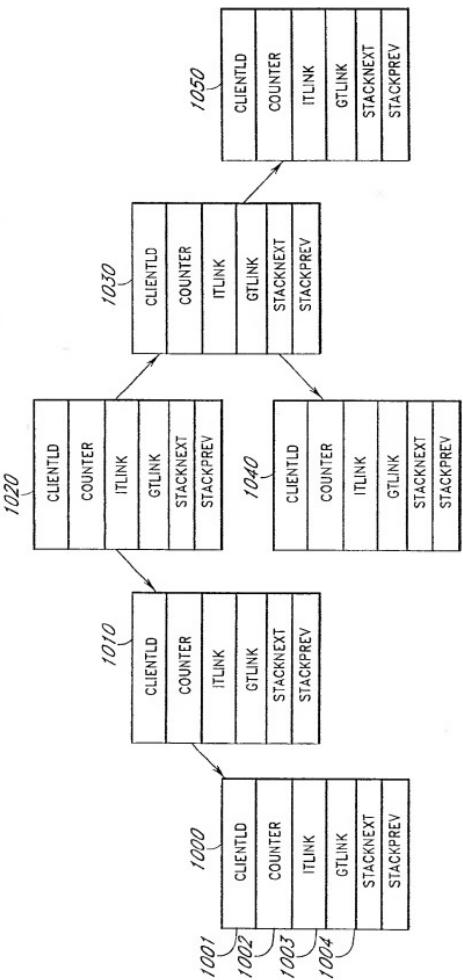


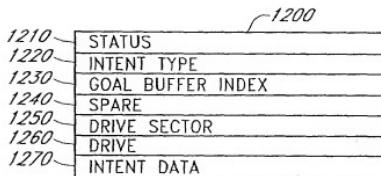
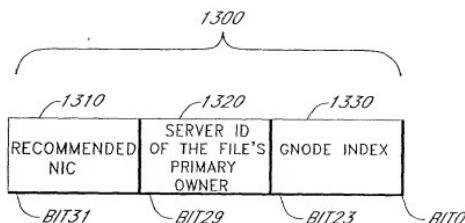
FIG. 8A

**FIG. 8B**



**FIG. 9**



*FIG. 12**FIG. 13*

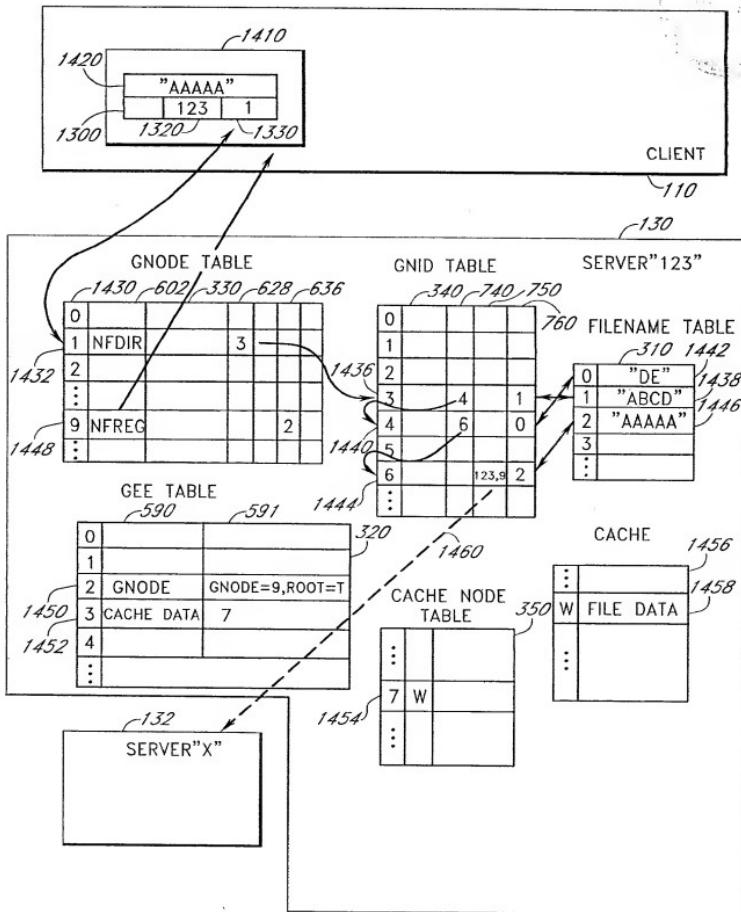


FIG. 14A

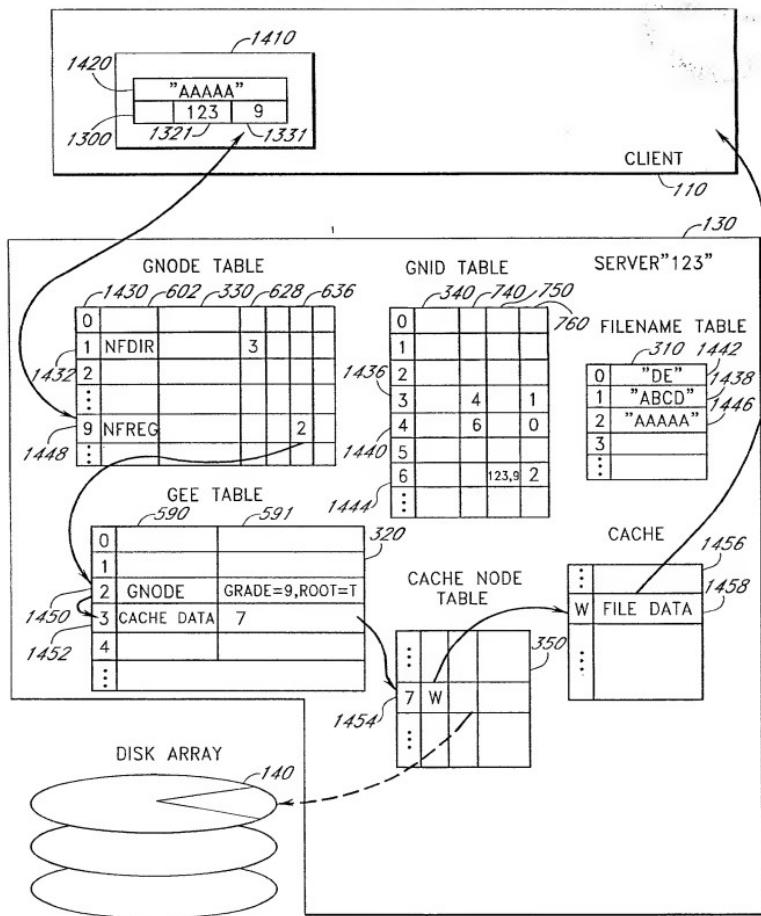


FIG. 14B

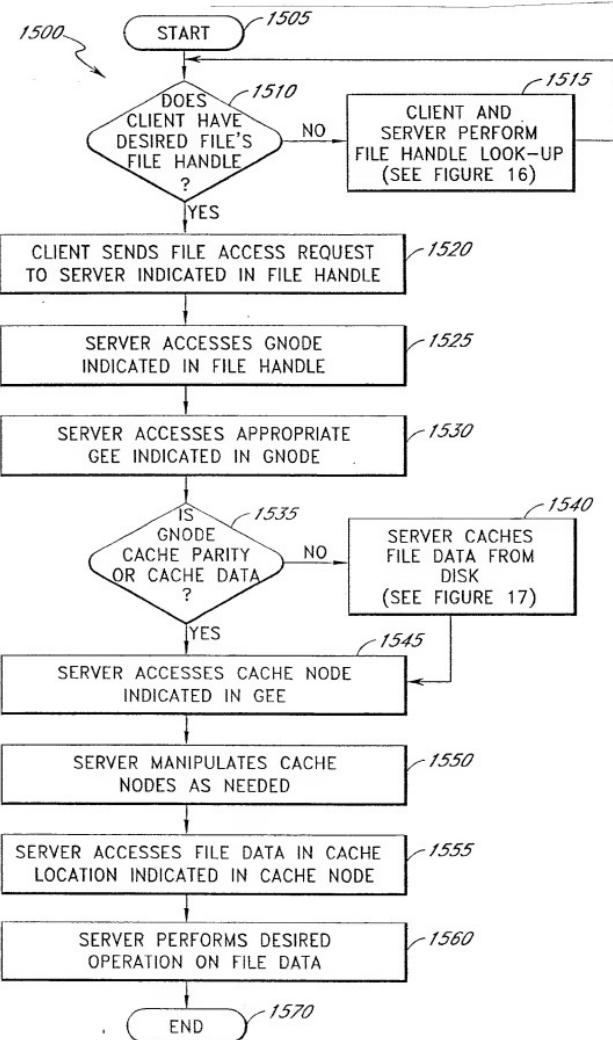


FIG. 15

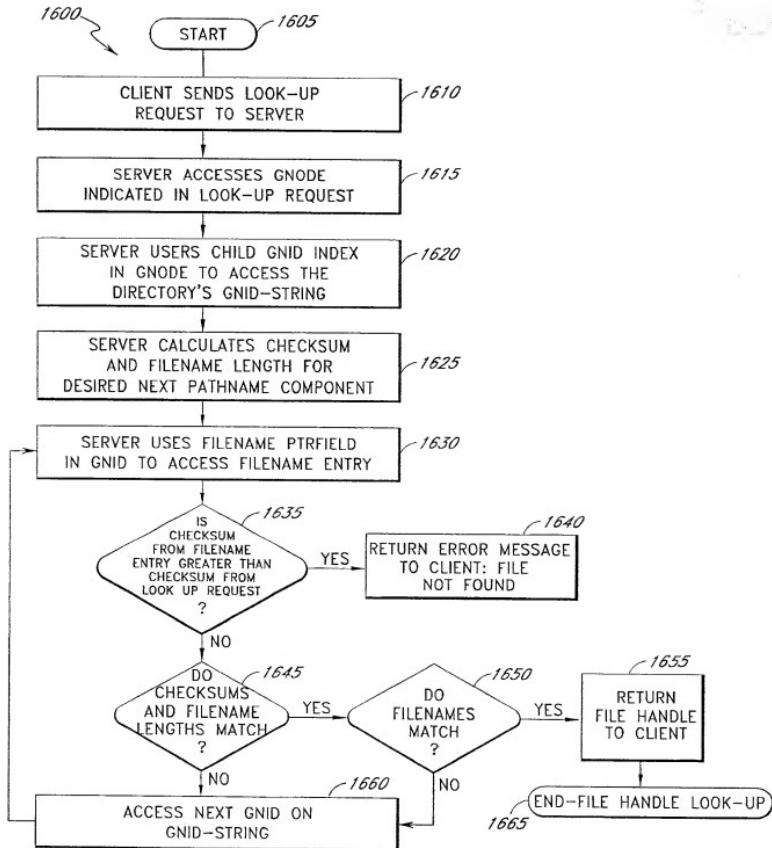
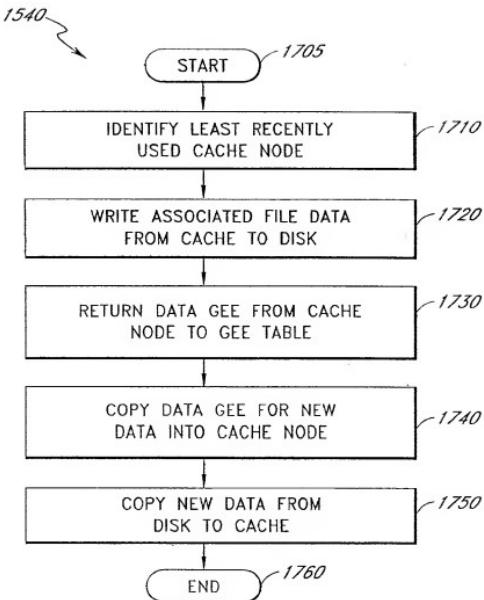


FIG. 16



*FIG. 17*

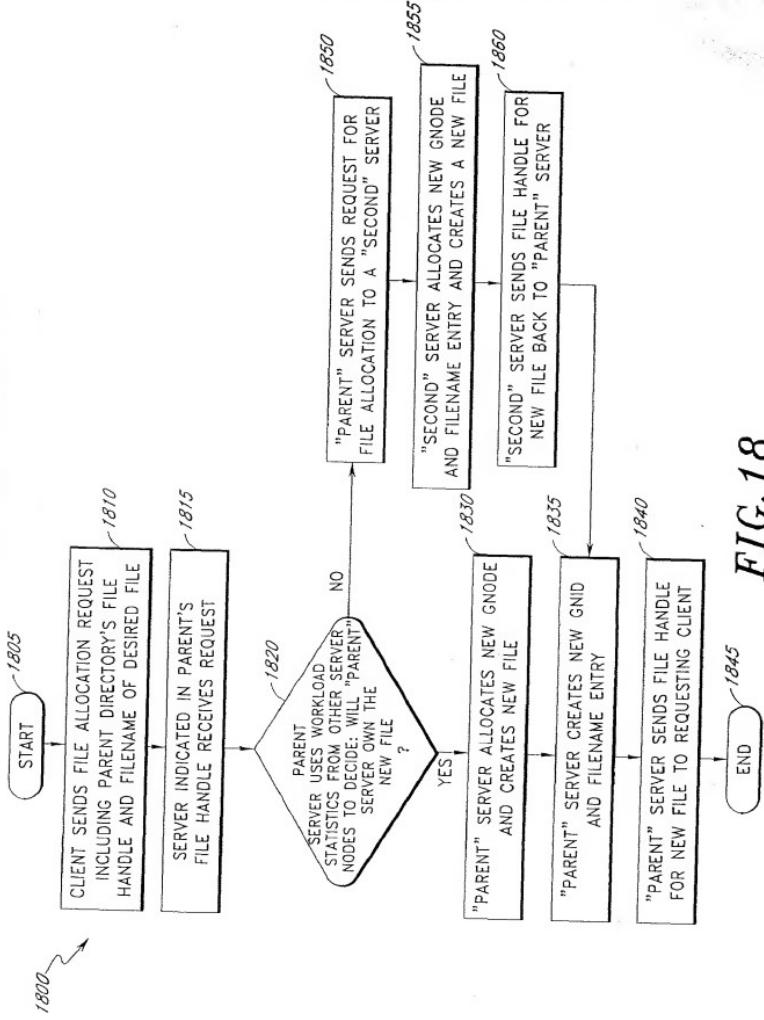


FIG. 18

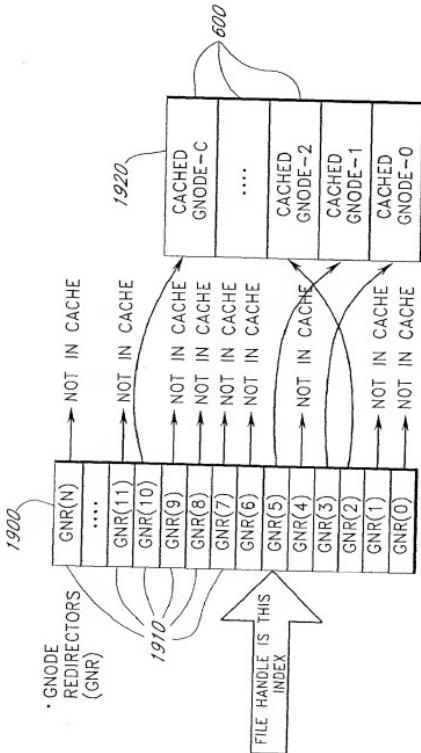


FIG. 19

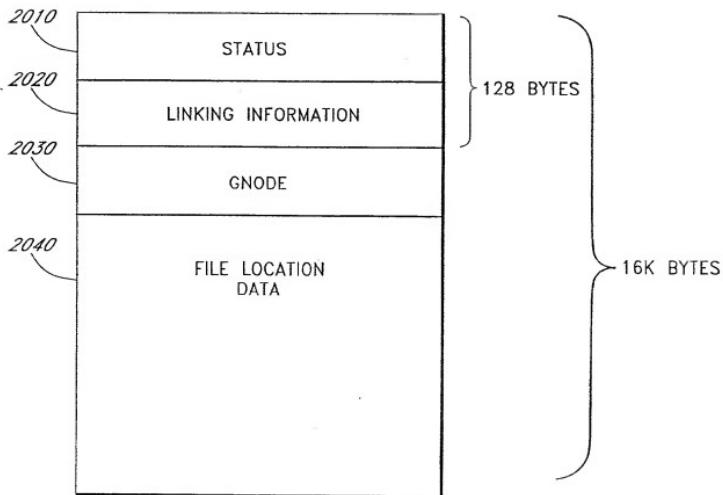


FIG. 20A

EX-101-20090001

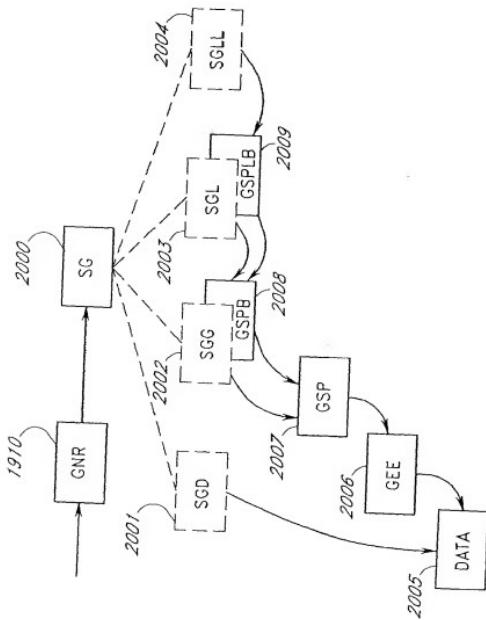


FIG. 20B

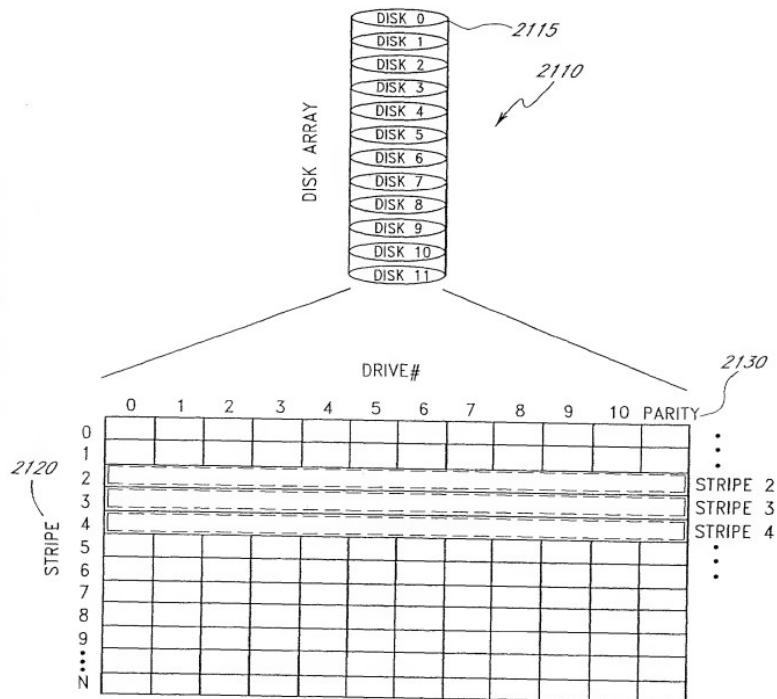
CONVENTIONAL RAID MAPPING  
(PRIOR ART)

FIG. 21

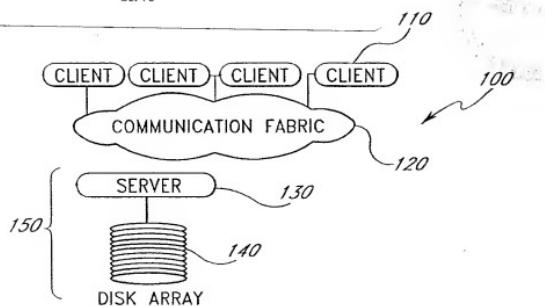


FIG. 22A

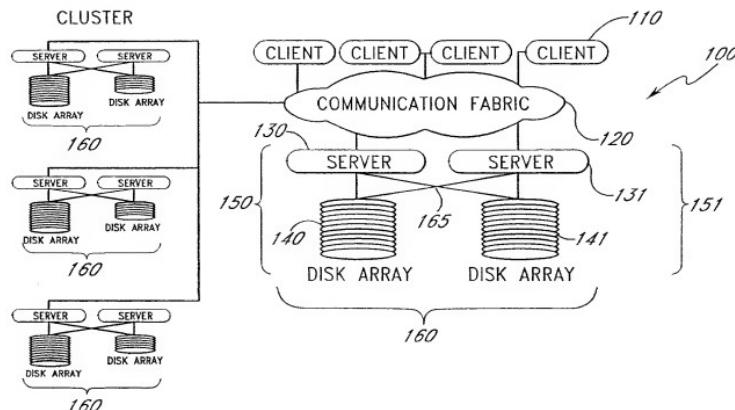


FIG. 22B

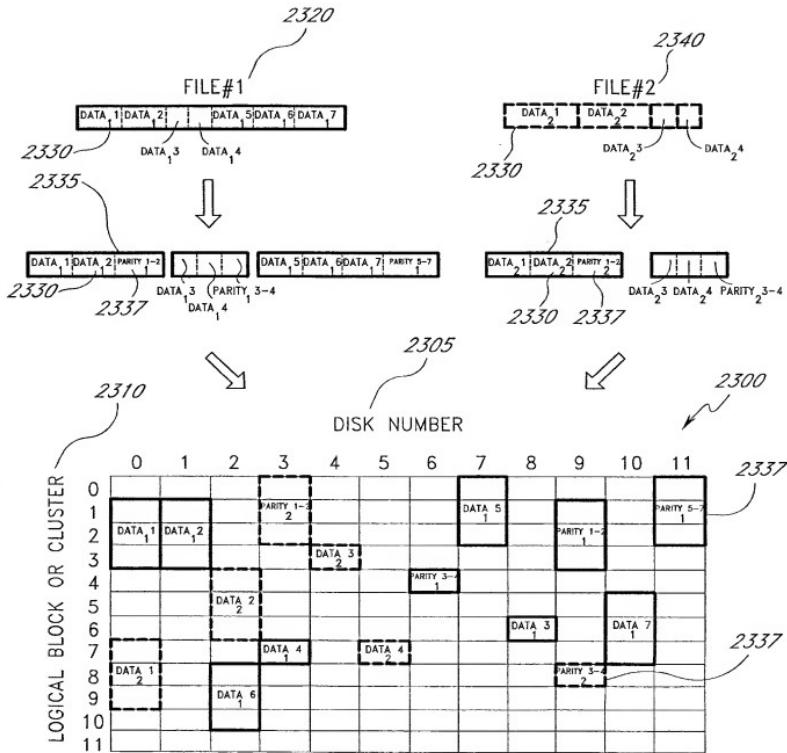


FIG. 23

2400

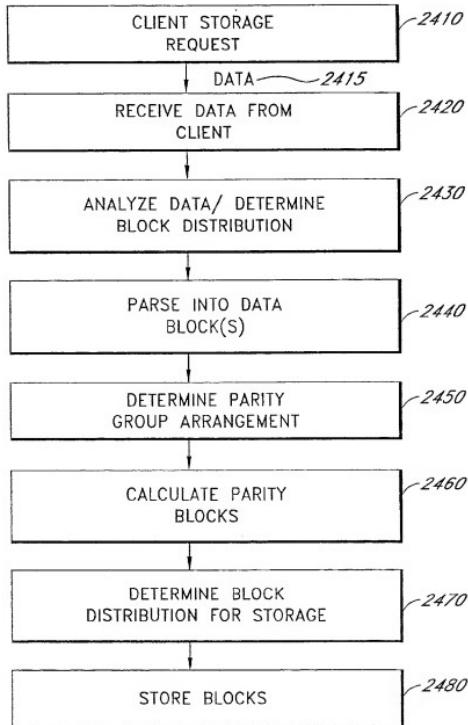


FIG.24A

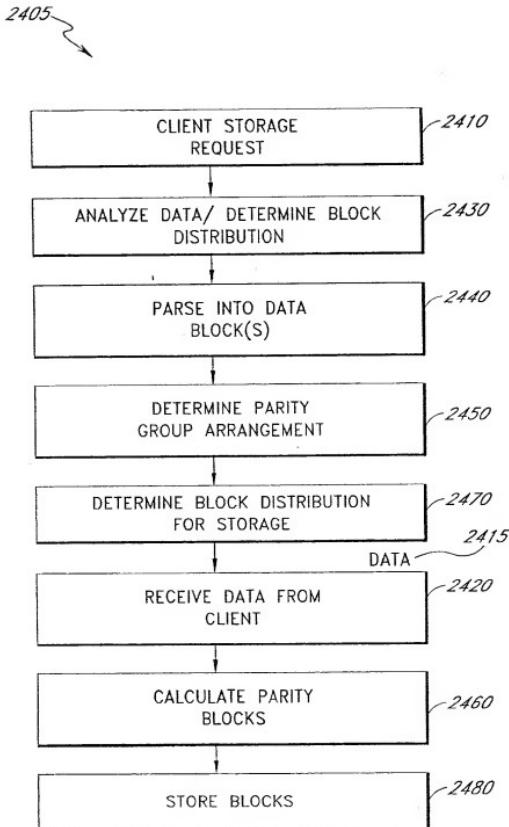


FIG. 24B

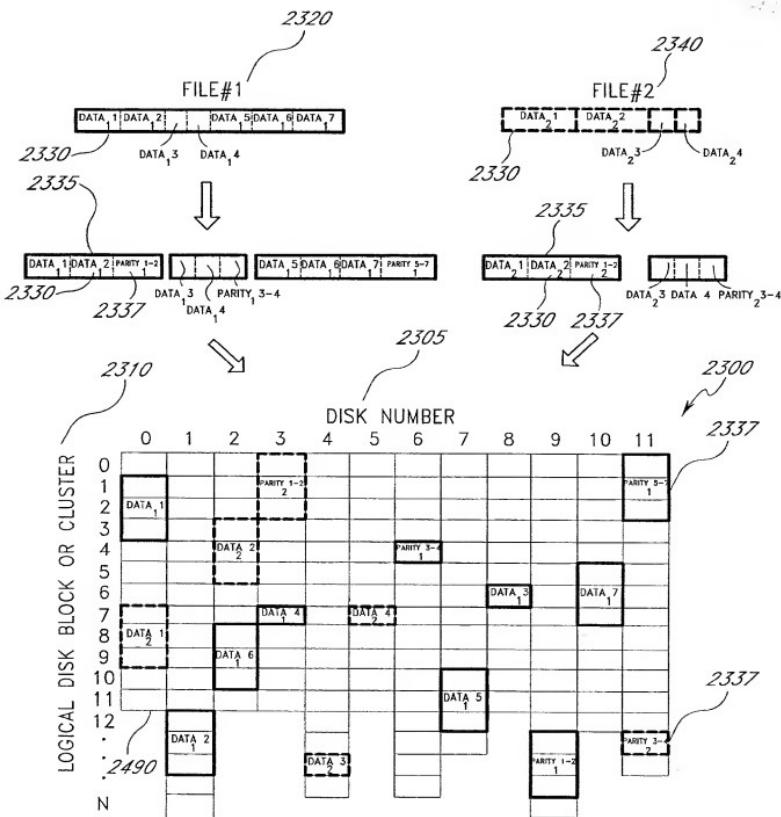
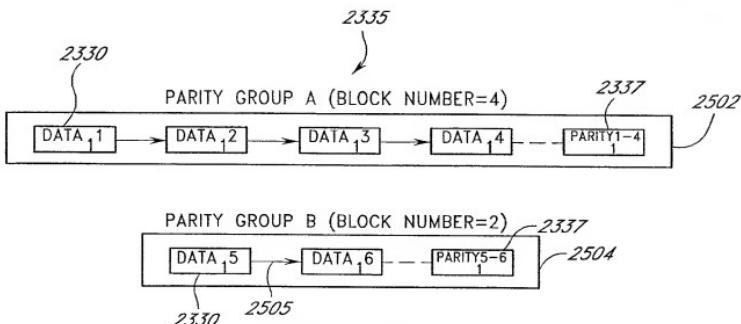
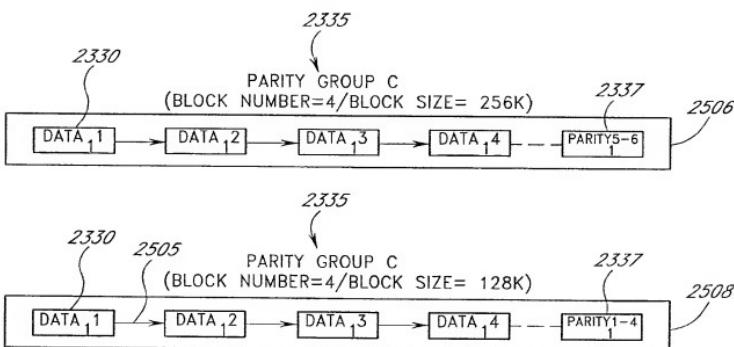


FIG. 25

***FIG. 26A******FIG. 26B***

## DISK ARRAY INITIALIZATION USING GEE TABLE SPACE ALLOCATION

<u>INDEX</u>	<u>G-CODE</u>	<u>DATA</u>	<u>2542</u>
... 45 46 47 48 49	GNODE DATA DATA DATA PARITY	EXTENT=2 BLOCKS 456,457:DRIVE 13 BLOCKS 667,668:DRIVE 15 BLOCKS 112,113:DRIVE 19 BLOCKS 554,555:DRIVE 2	
... 76 77 78 79	GNODE DATA DATA PARITY	EXTENT=2 BLOCKS 460,461,462:DRIVE 13 BLOCKS 671,672,673:DRIVE 15 BLOCKS 121,122,123:DRIVE 19	
... 88 89 90 91	... GNODE DATA DATA PARITY	EXTENT=2 BLOCKS 463,464,465:DRIVE 2 BLOCKS 674,675,676:DRIVE 5 BLOCKS 124,125,126:DRIVE 13	
...			

FIG. 27

2448

## ARRAY PREPARATION/ G-TABLE FORMATTING

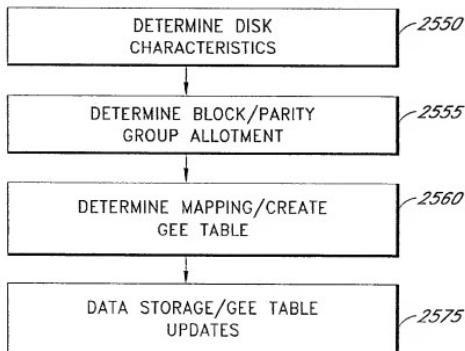


FIG.28

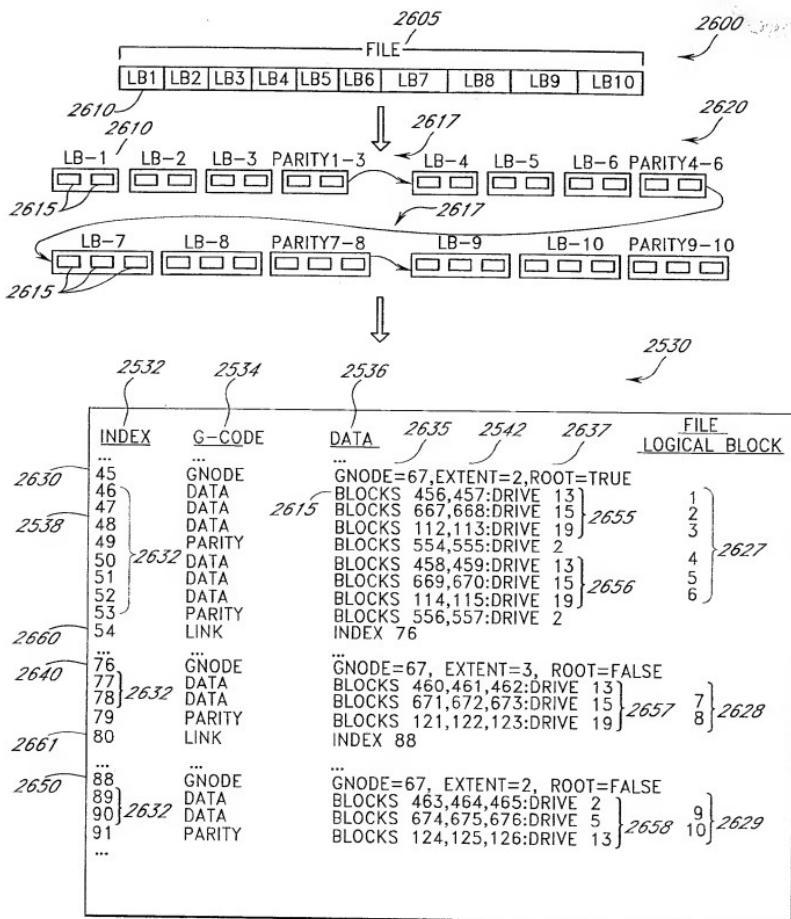


FIG. 29

## DRIVE FAILURE RECOVERY MECHANISM

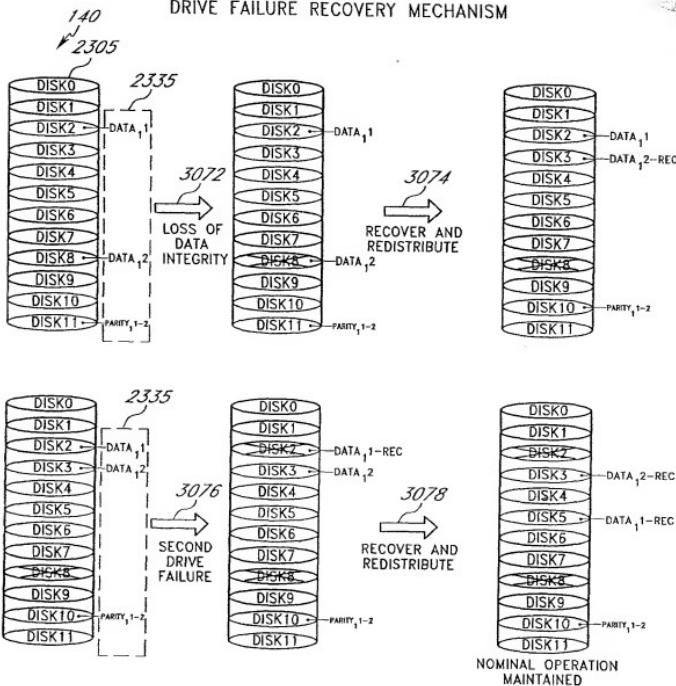


FIG. 30

3172

#### DATA RECOVERY PROCESS

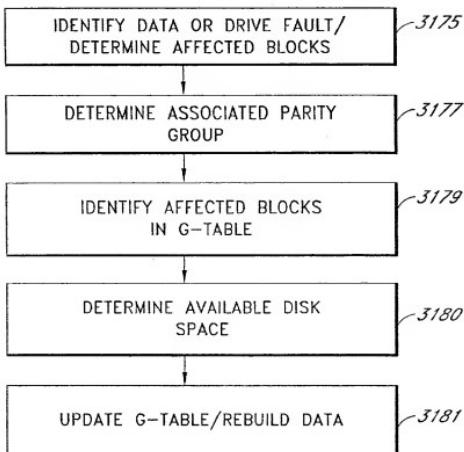


FIG. 31

卷之三

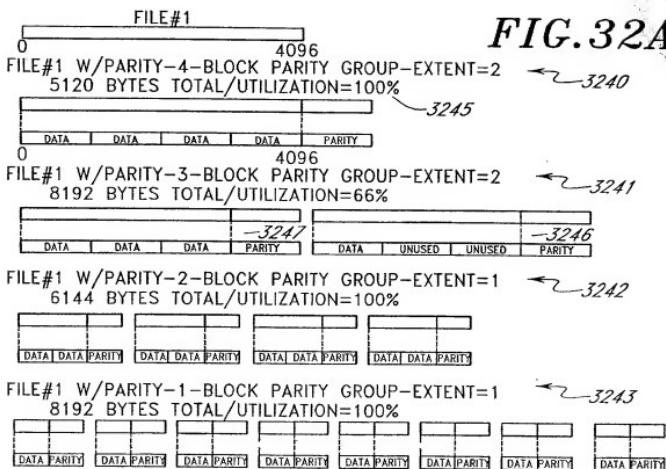


FIG. 32A

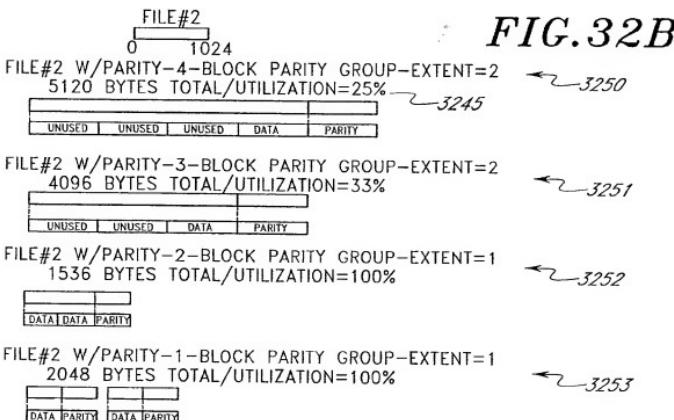


FIG. 32B

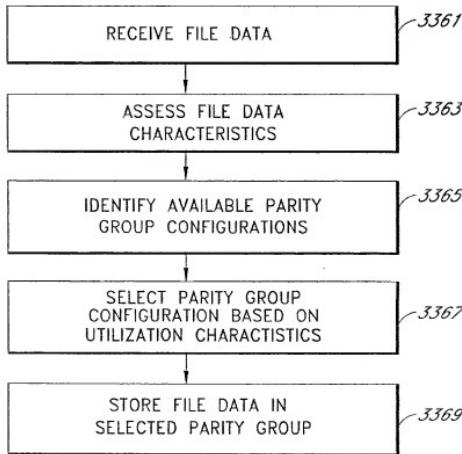
REPLACING FILE SYSTEM PROCESSORS BY HOT SWAPPING

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3360  
↓



*FIG. 33*

**FIG. 34A**

		INITIAL ALLOCATION		3491	DISK SPACE%	3485
[DATA]	[DATA]	DATA	DATA PARITY	4 BLOCK PANITY	3480	10000 GROUPS 36%
[DATA]	[DATA]	DATA	DATA PARITY	3 BLOCK PANITY	3481	10000 GROUPS 28%
[DATA]	[DATA]	DATA PARITY		2 BLOCK PANITY	3482	10000 GROUPS 22%
[DATA]	DATA PARITY			1 BLOCK PANITY	3483	10000 GROUPS 14%

**FIG. 34B**

		FREE	OCCUPIED	TOTAL	DISK SPACE%
3480	4 BLOCK PANITY	2500 GROUPS	7500 GROUPS	10000 GROUPS	36%
3481	3 BLOCK PANITY	7500 GROUPS	2500 GROUPS	10000 GROUPS	28%
3482	2 BLOCK PANITY	3500 GROUPS	6500 GROUPS	10000 GROUPS	22%
3483	1 BLOCK PANITY	500 GROUPS	9500 GROUPS	10000 GROUPS	14%

**FIG. 34C**

		FREE	OCCUPIED	TOTAL	DISK SPACE%
3480	4 BLOCK PANITY	2500 GROUPS	7500 GROUPS	10000 GROUPS	36%
3481	3 BLOCK PANITY	-5000 GROUPS OF 3 BLOCK PARITY	2500 groups	5000 GROUPS	14%
3482	2 BLOCK PANITY	+10000 GROUPS OF 1 BLOCK PARITY	3500 GROUPS	6500 GROUPS	22%
3483	1 BLOCK PANITY		10500 GROUPS	9500 GROUPS	28%

REDISTRIBUTION

3500

## PARITY GROUP REDISTRIBUTION PROCESSES

FIG. 35A

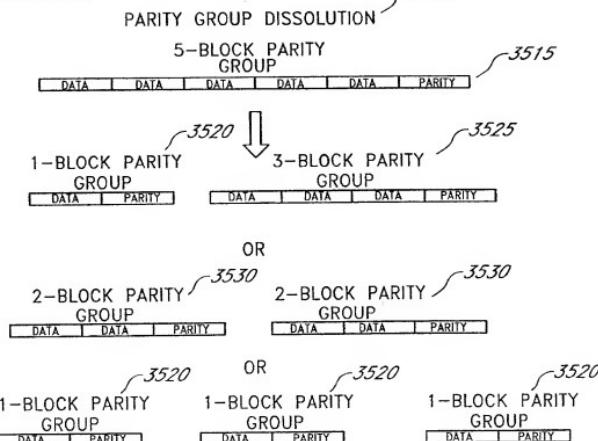
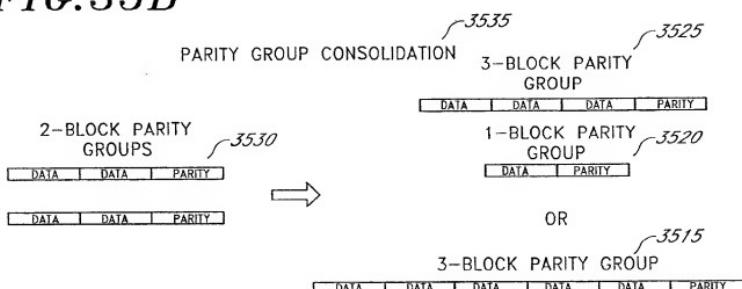


FIG. 35B



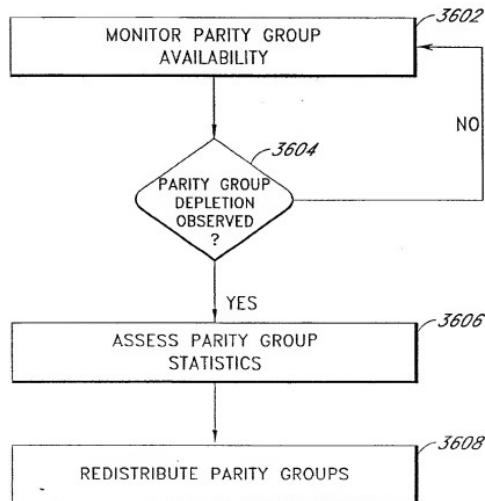


FIG. 36

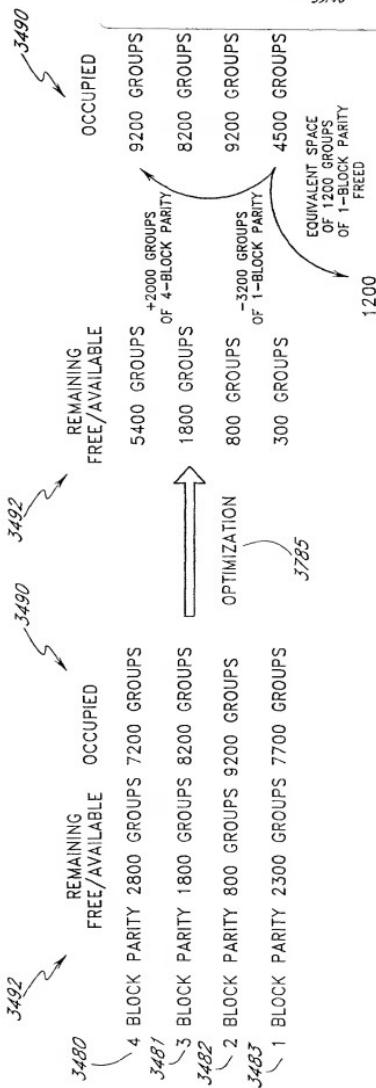


FIG. 37

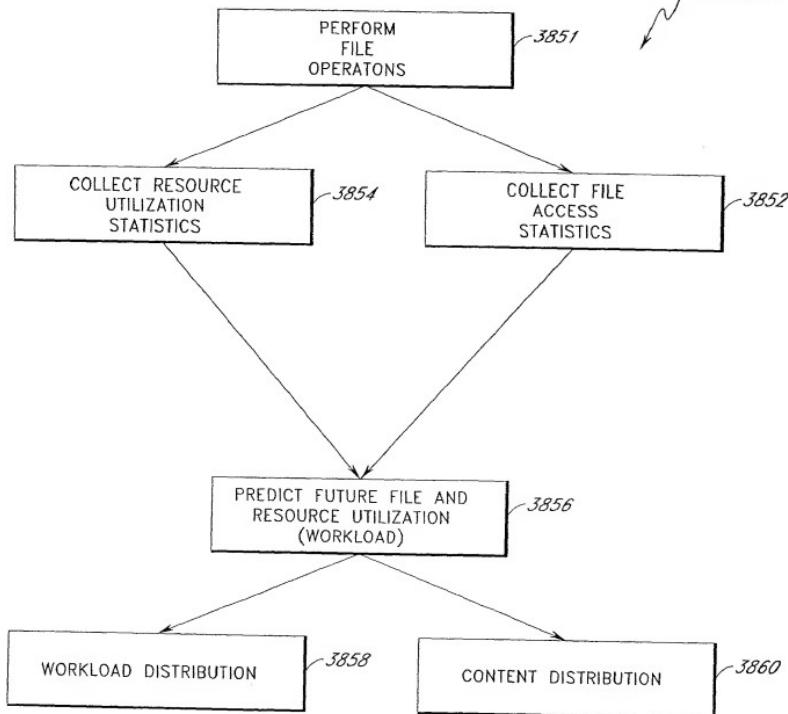


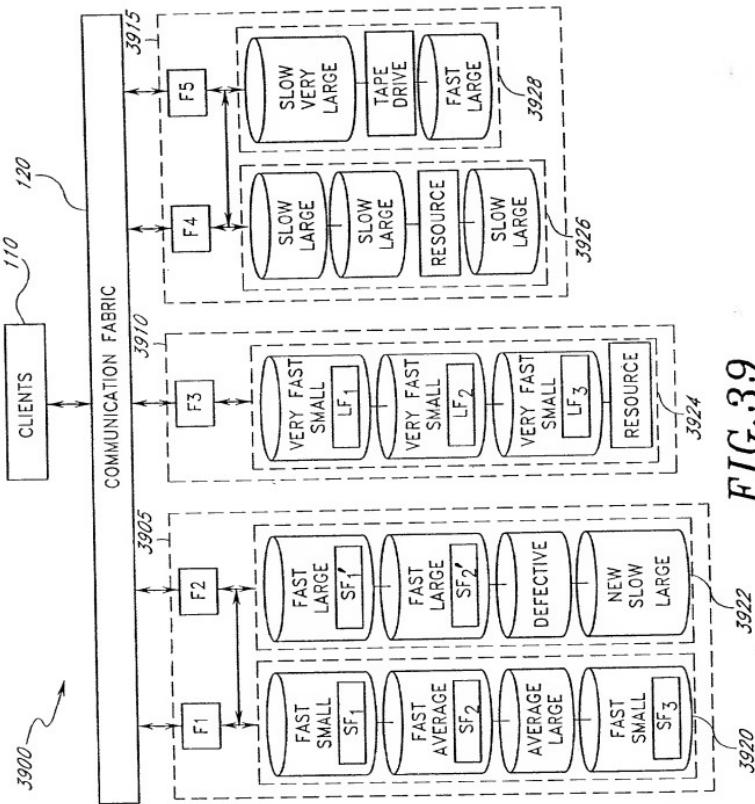
FIG. 38

## REPLACING FILE SYSTEM PROCESSORS BY HOT SWAPPING

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**FIG. 39**

3922 3920

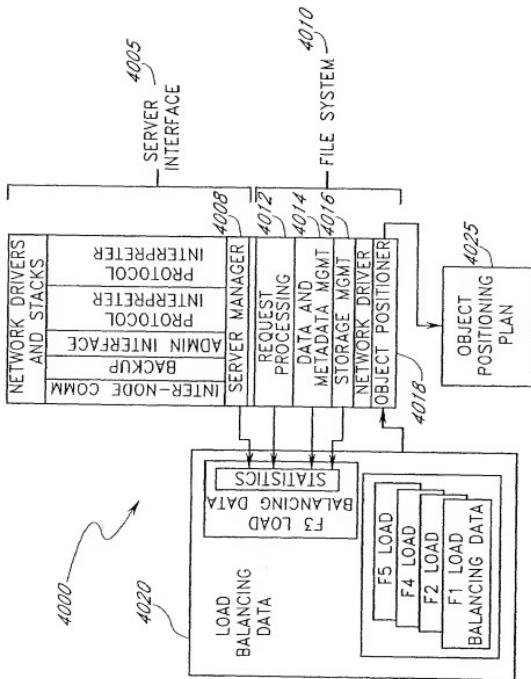


FIG. 40

### F3 OBJECT POSITIONING PLAN

- PUSH LF TO F4-F5 CLUSTER
- ISSUE FILE HANDLE FOR LF=STALE
- IF REQUESTED,
  - SEND ACCEPTANCE FOR COPY OF SF TO F1
  - CREATE COPY OF SF
  - SEND FILE HANDLE OF SF TO F1

4025

*FIG. 41*

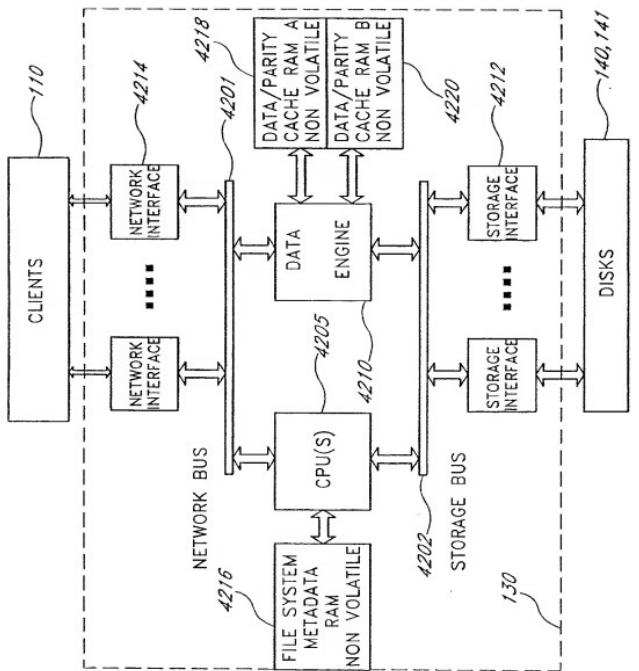


FIG. 42

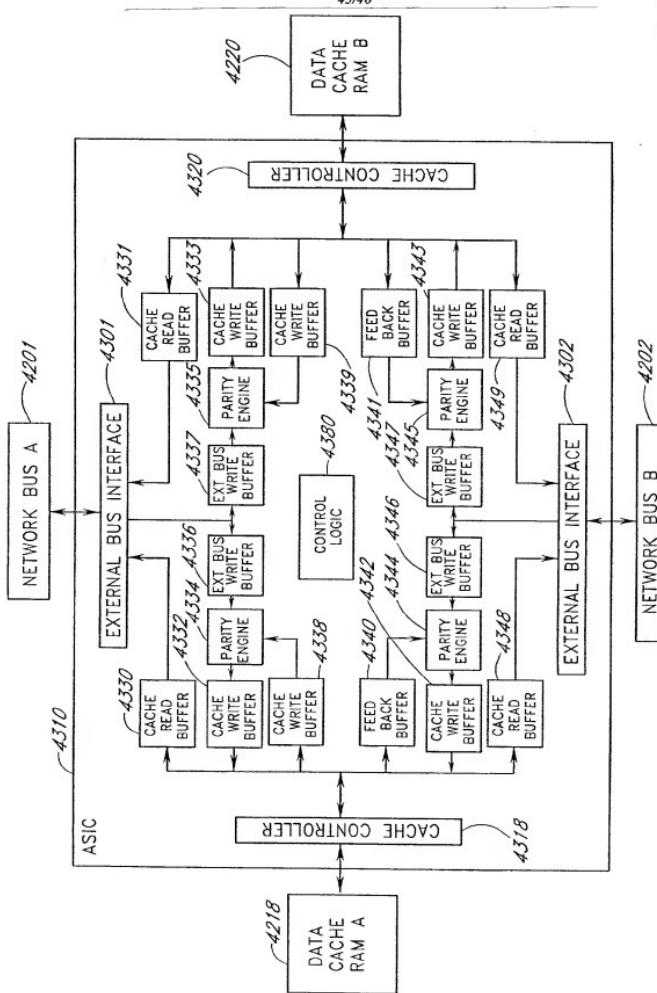


FIG. 43

PCI MAP	BLOCK SIZE	OPCODE	SPARE	PARITY INDEX	SPARE	RAM ADR
63.....62,61.....59,58.....56,55.....51,50.....35,34,32, 31.....0						

4400

FIG. 44